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AUTHOR Pinnell, Gay Su
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ABSTRACT

A study examined the processes and results of children's involvement in interrelated reading/writing activities. First, descriptions of 23 children's reading and writing behavior were drawn from a group of case studies of children who were participating in Reading Recovery, an early intervention program that targets first grade children at risk of failure in reading. Examination of teachers' daily records of reading and writing and of children's writing samples indicated that when given opportunities to engage in related reading and writing, children did connect those processes in a variety of ways. Second, outcome data were examined to document results of children's participating in this integrated program. Eight dependent variables were used to compare two groups of children (133 in all) who participated in the program with a group of 37 that participated in another program. Comparisons indicated that children who were deliberately engaged in an integrated program achieved higher scores on both reading and writing measures. Children who were daily engaged in holistic lessons that included reading and writing and stories and messages achieved accelerated progress. (Five data tables and nine figures are included, and 18 references are appended.) (Author/JK)

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# CENTER FOR THE STUDY OF READING

## A READING RESEARCH AND EDUCATION CENTER REPORT

Technical Report No. 417

## SUCCESS OF CHILDREN AT RISK IN A PROGRAM THAT COMBINES WRITING AND READING

Gay Su Pinnell
Ohio State University

January 1988

University of Illinois at Urbana-Champaign
51 Gerty Drive
Champaign, Illinois 61820

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## Abstract

This study examined the processes and results of children's involvement in interrelated reading/writing activities. First, descriptions of children's reading and writing behavior were drawn from a group (N = 23) of case studies of children who were participating in the Reading Recovery, an early intervention program that targets first grade children at risk of failure in reading. Examination of teachers' daily records of reading and writing and of children's writing samples indicated that when given opportunities to engage in related reading and writing, children do connect those processes in a variety of ways. Second, outcome data were examined to document results of children's participating in this integrated program. Eight dependent variables were used to compare two groups of children (n = 96; n = 37) who participated in the program with a group (n = 37) that participated in another program. Comparisons indicated that children who were deliberately engaged in an integrated program achieved higher on both reading and writing measures. Children who were daily engaged in holistic lessons that included reading and writing and stories and messages achieved accelerated progress.

# SUCCESS OF CHILDREN AT RISK IN A PROGRAM THAT COMBINES WRITING AND READING

The efficacy of teaching reading and writing together as interrelated processes seems obvious enough to justify designing a curriculum to integrate the two. We know that young children begin to construct writing at the same time, or shortly before, they begin to read individual words (Clay, 1975; Calkins, 1980; Ferriero & Teberosky, 1982). As children reconstruct written language for themselves, they truly make it their own. As Barr (1985) has expressed it, reading and writing "are best developed through lively and sustained interaction one with the other."

Studies of spelling have also revealed possible relationships. The reading and writing processes are different and those differences deserve more study, but as Read (1986) observed, "there is clearly some relation between spelling and reading." The processes are fundamentally linked because they both deal with text, and some researchers (Tierney & Pearson, 1983) have connected the composing processes of writing with the reader's construction of the text while reading. Research on social aspects of reading (Tannen, 1982; Bloome & Green, 1984; Taylor, 1983; Cochran-Smith, 1985) recognizes that both processes are embedded in the social and linguistic contexts which the child experiences first at home and then at school. These contexts influence children's access to literacy resources for use in both reading and writing.

A theoretical framework for emergent literacy describes reading and writing as cyclical and complementary processes (Clay, 1979, 1986). As children read and write, they make the connections that form their basic understandings about both. Learning in one area enhances learning in the other. There is ample evidence to suggest that the processes are inseparable and that we should examine pedagogy in the light of these interrelationships. Hence, the two activities should be integrated in instructional settings. Teachers need to create supportive situations in which children have opportunities to explore the whole range of literacy learning, and they need to design instruction which helps children make connections between reading and writing.

Assuming that discovering and using reading/writing connections is an important part of the process of becoming literate, it becomes especially important for children who are at risk to have maximum opportunities for exploring and relating the two processes. This paper focuses on the reading progress of first grade children initially determined to be at risk of failure in reading. These children were involved, during their first grade year, in a unique intervention program, Reading Recovery, which was designed to provide opportunities for exploring literacy. This report is based on research[1] that builds on the work of Clay (1972, 1979) and draws perspectives from research in early reading and writing behavior (notably Read, 1971, 1986; Bissex, 1980; Harste, Woodward, & Burke, 1982) and on studies of the social contexts of literacy activities (Bloome & Green, 1984). First, descriptions of children's reading and writing behavior are drawn from a group of case studies. These studies were undertaken to generate hypotheses concerning the ways children approached tasks and directed their own learning during the reading/writing activities. Then, to confirm the outcomes of the program, quantitative data from the large study of children's progress are presented.

## The Reading Recovery Program

Several features of the Reading Recovery program make it a viable setting for studying reading/writing connections in the literacy learning process. Developed in New Zealand by Marie Clay (1979), Reading Recovery provides short-term intensive help that results in accelerated progress for at-risk children. The program does not have a set of materials or a step-by-step prescribed curriculum. Instead, the program depends for its effectiveness on trained teachers' ability to observe a child's reading and writing behavior, to infer the child's intentions and underlying cognitive processes, and to make instructional decisions, including adjusting his/her own behavior in response to the children.

The program targets the poorest readers in the class, who are taken out of their regular classroom for one-to-one planned lessons for 30 minutes each day. The goal of the program is to help children discover effective reading strategies which will result in an independent system for reading. These strategies are developed while the child reads and writes stories. During each lesson a child reads several short books which have natural and predictable language, composes, and writes a story. Every day the child is introduced to a new, more difficult book which he or she will be expected to read without help the following day. The intervention continues until the individual child has developed effective strategies for independent reading and can function satisfactorily in the regular classroom without extra help.

The Reading Recovery framework stipulates that children must be involved in whole text reading and writing tasks rather than isolated teaching or drill on items. Furthermore, teachers must make different decisions for each child. Although teachers use a designated set of procedures, they individually select books and specific instructional goals and practices for each child. At numerous critical points during each lesson, teachers must consciously make decisions based on analyses which are integral to the program.

To implement Reading Recovery, teachers receive a full year of special training. Teachers are trained through clinical and peer-critiquing experiences guided by a skilled leader. Extensive use is made of a one-way glass. On one side, the teacher demonstrates by teaching a lesson to a student. On the other side of the glass, members of the teacher group observe and simultaneously discuss the lesson. Afterwards, the teacher talks with peers about the demonstration. The goal of this special inservice course is to enable teachers to learn powerful ways of working with children to help them become readers.

The success of Reading Recovery is measured in terms of outcomes for children. Children are expected to make accelerated progress to a point where they can be released, or "discontinued" without need for further extra help. Clay's initial study and replications in New Zealand showed that the Reading Recovery procedures were effective in reducing reading failure. Her follow-up study showed that children who were discontinued from the program continued to progress at average rates without special help.

The New Zealand studies had provided some evidence to support the program's effectiveness; but Ohio represented a different educational context. The Ohio research project was undertaken for the following reasons:

1. Clay's studies had not involved children who were receiving classroom instruction in a reading program which focused on direct teaching of a sequence of skills and placed great emphasis on phonics. New Zealand classrooms tended to feature language experience and a variety of natural language texts and literature as instructional material. Classrooms in our study featured reading groups and instruction based on a commercial reading system with heavy concentrations on skills and phonics.

2. Clay's studies did not involve teachers who were specifically trained to use a skills approach to reading. New Zealand teachers who became Reading Recovery teachers had been teaching in schools where language experience was generally used. Teachers in our study were skills oriented and had been directed to use the basal system for reading instruction.

3. Previous studies of the impact of Reading Recovery had not utilized a randomly selected comparison group.

4. The instructional setting offered by the program provided a laboratory for systematic study of children's behavior in reading and writing.

## Descriptive Study of Reading/Writing Connections

The two kinds of data reported here provided different and equally important kinds of information about the instruction of young children having difficulty in reading. The descriptive information is drawn from the following sources: (a) children's daily writing; (b) video tapes of one teacher and two children at eight points in time; and (c) teachers' records, including observational notes taken daily according to instructions. In the analysis of this data, we asked three questions:

1. Is there evidence that children connect reading with writing processes during individual lessons which include both activities?

2. Are teachers who receive special training in observing children's reading and writing behavior able to capture in their daily notes those behaviors which indicate children are making connections between the two processes?

3. What kinds of links between reading and writing do children make?

Our observations provided insight as to how children responded to the instruction. We tried to identify specific behaviors which take place when children have the opportunity to find their own links between reading and writing. The behaviors described here seemed to coincide with the accelerated progress which is the goal of the program.

**Children.** All children in the Reading Recovery program were first grade students in urban schools with high failure rates and high proportions of children on free or reduced price lunch. Children were distributed over 14 schools and were taught by specially trained teachers. Of the entire group of Reading Recovery children, 73% were successfully released by the end of the year. Because we wanted to study some children in more detail, we selected four teachers who were considered good record keepers and generally insightful observers. From the group of children taught by those four teachers, we identified those who made accelerated progress and then randomly selected 23 for in-depth analysis of records.

**Materials.** Three kinds of recorded information were examined, each of which offered checks and confirmation for the others. The primary source of information was teachers' lesson plans for work with individual children. Except for selecting the new text to be read that day, Reading Recovery teachers do *no* preplanning for the daily lesson. Instead, teachers are expected to "follow the child's lead," respond in accordance with teacher analysis of children's behavior, and look for the "teachable moment." The "lesson plan," then, is not a traditional plan but an open-ended observational record.

On the lesson plan form the teacher notes significant observations which over time build a detailed record of behavior. In their weekly seminars, which continue throughout the year, teachers are trained in observational skills and on the selection of the types of behaviors to attend to and note in the plans. Evidence that the child is making connections between reading and writing is one of the areas to be noted. Teachers consciously look for this evidence as a sign of progress toward independent reading.

Children's daily writing samples were also examined. Each day, as part of the lesson, the child is invited to compose and write a message in the writing book. The teacher supports the child when necessary, but the written products must be the child's own composition. At least one sentence is written and then read each day. Although time does not permit the writing of lengthy stories, some children continue the same theme over several days. After the writing is completed, the teacher rewrites the sentence on a strip of paper and then cuts it apart. The child then reassembles the

sentence and checks the reconstruction for accuracy by reading or checking with the original text. The entire sentence is always reread. The teacher records the child's responses in the daily lesson plan.

The third data source for this project was a series of video tapes made of one teacher working with two children. The tapes were made over a period of 6 weeks and provided a way to check the validity of teachers' plans.

**Lessons**. Reading Recovery lessons are individual half-hour sessions which include several components. First, the child rereads several books which he has read before. This process allows him to work on reading in a context that is easy and full of meaning. The stories are natural language texts. Each day, the teacher keeps a running record of the new book that was introduced to the child the day before. This record is a kind of shorthand reproduction of the exact reading behavior on that text. While an accuracy record is calculated, that is not the most important information from the running record. This useful tool provides a way of analyzing behavior to determine whether the child is developing effective reading strategies. The lesson also includes writing a message. The child, helped by the teacher, constructs words he needs. The teacher encourages the child to hear sounds in words and to represent them with letters. The message is then read many times and is copied on a sentence strip which is cut apart and reconstructed by the child. These "cut apart" words are not used out of context but are always read as part of the whole message. Finally, the teacher introduces a new book by first talking about it and then asking the child to read it. This new book will be read independently the next day while the teacher takes a running record.

**Procedures**. Drawing sample lesson plans from the selected teachers, we made a list of specific instances of behavior which in our judgment constituted evidence that children were making connections between reading and writing. These instances were listed for each child sampled and categorized. The same children's writing books were examined and related to the texts read on the same day or previous days. Third, video tapes were viewed using the list of categories prepared from the first two documents. These tapes generally confirmed that the types of behaviors listed by teachers were reflected in the actual lessons viewed and confirmed teachers' record keeping. Finally, representative examples were drawn out for reporting here.

**Results**. Our analysis of the information seemed to confirm that children search for ways to connect what they've learned in reading and writing. The children we studied appeared to use information gained in one area to help them solve problems in the other area. These preliminary observations revealed at least four types of behavior that seeemed to be characteristic of these children who were successful in making the transition to literacy. These behaviors are identified and described below.

1. **Children drew on previously read texts for specific words and phrases to use in writing.** For example, Debbie remembered the word "boo hoo" from a story, searched for it and copied it for this message.

**[Insert Figure 1 about here.]**

Teacher responses actively supported this kind of searching behavior. In another instance, Eli was trying to write the word cat. Noticing that the boy's eyes glanced toward a simple book he had read earlier, *Cat on the Mat* (1982), his teacher said casually, "Do you notice anything that will help you?" Eli reached for the book and used it to help him write the word. When asked about this teaching technique, the teacher said that she would not have told the child to look for the book and seldom encouraged copying because she liked children to construct words from their own analyses of the sounds. However, her observation of Debbie's searching behavior made it seem important to communicate to the child that she was taking the initiative to solve her own problems.

2. **Through writing, children developed awareness of visual information, which could then be used as an aid to problem-solving in reading.** This strategy was evident both in children's spontaneous actions and in teacher-guided actions. Lawndale was reading a new story which had the word "how." After looking at the word for a moment, he reached for a scrap of paper and wrote the word "cow," which was in his fluent vocabulary. Then, he went back to his story, said the word "how" and proceeded to read the rest of the text. On another occasion, Lawndale was reading this text: "Go home,' said the cows." He read, "Go home,' said the horse" and stopped, appearing to be puzzled. Pointing to the word "cows," the teacher said, "Could that be horse?" "No," said the child, looking at the word and glancing swiftly at the picture, "it's cows."

3. **Children used reading to check their construction of the cut-up sentence, often correcting their own work independently.** After constructing a message, the teacher cut the written sentence into words. Then the children put the sentence back together. They were encouraged to "check" it by reading and in the process they usually corrected words placed in the wrong order or wrong orientation. The child's own language provided a highly supportive and meaningful context that made it easy for the child to pay close attention to print. For example, Lawndale put together a cut-up sentence containing the word "I'll," a difficult word in the context of this task. Lawndale placed that word upside down, but when he read the sentence, he turned it right side up without prompting from the teacher. Checking and self-correcting were frequently observed by teachers, with examples occurring in the records of every child examined. It appears that this task elicited the use of reading as a check on writing and supported links between the two processes.

4. **Children used previously read texts as a resource for composing their written messages.** For example, for several days Kerry composed sentences that were obviously drawn from the books she was reading in the classroom. Those reading system pre-primers focused on several characters, among them Sara, Ana, and Ken. This sentence is typical of those Kerry wrote for several weeks.

**[Insert Figure 2 about here.]**

Then, in Reading Recovery, Kerry read a story about *The Pumpkin*. Based on this "natural language" text, she wrote this sentence.

**[Insert Figure 3 about here.]**

The following day, Kerry read *If You Meet a Dragon* and with her teacher's encouragement wrote this.

**[Insert Figure 4 about here.]**

These examples provide evidence that this child's concept of text was strongly influenced by his experience in classroom reading instruction and it took many experiences with a variety of texts to expand his awareness. Finally, he was ready to risk a departure from known patterns and created this text.

**[Insert Figure 5 about here.]**

One of his final stories, written just before leaving the program, began like this:

**[Insert Figure 6 about here.]**

Janelle wrote this sentence on the same day that she read *I Am Frightened*.

**[Insert Figure 7 about here.]**

Henry began the program with this sample of writing.

**[Insert Figure 8 about here.]**

Several weeks later he produced a series of sentences which formed a continuing text which he wrote over several days. Each day, he read the previous days writing before composing the new sentence. The resulting text reflects repeating patterns such as those Henry encountered in the simple stories he was reading in individual lessons. Just before the last entry, he read the story, *To Town*, in which each page reads, ". . . all the way to town." Henry demonstrated his use of available literacy resources as he composed his own text. The supportive context allowed him to do so.

**[Insert Figure 9 about here.]**

**Discussion.** This descriptive analysis provides evidence that when given opportunities to engage in related reading and writing, and supported by a sensitive and aware teacher, children do connect the two processes. Those connections vary in nature and are highly idosyncratic, depending on the individual child's own experience and interests. The analysis justifies further investigation of children's behavior in situations where they are expected to link reading and writing within "whole task" literacy activities. Observations of children must be more systematic than teachers' records are able to provide. More controlled data collection and analysis could increase our knowledge about the way children make connections between reading and writing. For example, detailed analysis of children's reading/writing connections during Reading Recovery lessons would be a fruitful area for investigation. The following investigations might be undertaken:

1. Behaviors indicating reading/writing connections could be measured and mapped through microanalysis of video tapes of a sample of children.

2. Since children's rate of progress in reading is very carefully monitored in Reading Recovery, children's behavior might be analyzed in detail during acceleration periods. A common observation shared by teachers is that when children begin to notice connections between texts in reading and writing, they become more fluent and make faster progress. This hypothesis could be tested through relating children's behaviors to their rate of progress.

3. Before entering the program, Reading Recovery children are always the lowest readers in their classrooms. The types of observations suggested above might be made of kindergarten and first grade children who are high achievers making rapid progress.

## Study of Achievement

The previously described behaviors and teacher-child interactions are powerful because they provide evidence of reading achievement that is brought about by connecting reading and writing. The descriptions are not simply interesting "slices of school life." The 23 children examined in the descriptive study were part of a large group of children who were initially determined to be poor risks and who instead made good progress.

The next analysis documents student achievement of that larger group. Children who received instruction in Reading Recovery, an instructional approach which deliberately linked reading and writing, were compared with children who participated in an alternative compensatory program which focused on skills and isolated information. Eight dependent variables were used to compare three groups of children: (a) children from program classrooms who received Reading Recovery instruction; (b) children from regular classrooms who received Reading Recovery instruction; and (c) children from regular classrooms who did not receive Reading Recovery lessons. Program classrooms were those classes taught by a teacher who had received training in Reading Recovery, although no Reading Recovery instruction took place in the classroom. Regular classrooms were those taught by teachers who had not received Reading Recovery training.

To provide perspective for viewing the achievement of the three groups, we selected a random sample of children from regular classrooms in the same schools and calculated an "average range" for the first grade population in project schools. This "average" assisted us in determining each group's relationship to the expected range of achievement for Reading Recovery children.

**Children.** Children (N = 184) in the study were first graders in the urban schools described above. They were identified for both compensatory programs using a combination of teacher judgment and individual assessments. All children were within the lowest 20% achievement group of their respective classrooms and, therefore, at risk of failure in reading. Three groups of children were tested. *The Reading Recovery Program Class* group of 96 children was comprised of the entire lowest 20% group of children in classrooms that were taught by Reading Recovery Teachers (one classroom in each school). They received group and individual daily lessons in Reading Recovery. *The Reading Recovery Regular Class* group of 51 children was the lowest 20% group of children in regular classrooms: classrooms not taught by Reading Recovery Teachers (three to four classrooms in each school who were randomly selected for Reading Recovery service). The comparison group of 37 children in the lowest 20% of regular classrooms was not selected for Reading Recovery but was taught throughout the year by an alternative compensatory program. The alternate program involved a series of skill-oriented and drill activities conducted in small groups and individually by a trained paraprofessional. The alternate compensatory program was relatively new to the school district (implemented within the last four years), and, like Reading Recovery, was restricted to first grade children and viewed positively by teachers in the system. All children continued to participate in their classroom reading activities.

**Dependent measure.** At the end of the school year, each child was tested on the 6 assessments included in Clay's Diagnostic Survey (Clay, 1979, 1986) and three additional measures. They are described below.

1. *Letter Identification*: Children were asked to identify 54 different characters, including upper and lower case letters and conventional print for "a" and "g."

2. *Basal Word Test*: Children were asked to read down a list of words drawn from the most frequent words in the basal reading system pre-primers used by the district. Three lists were constructed, the first was used in September, the second for program entry or release during the year, and the third in May.

3. *Concepts About Print*: Children were asked to perform a variety of tasks during a book reading. The tasks presented a standard situation to check on significant concepts about printed language; for example, the concepts of word and letter, the use of space, or awareness of left to right directionality. Two versions of the test were used.

4. *Writing Vocabulary*: Children were asked to write down all the words they knew how to write in 10 minutes, starting with their own names and including basic vocabulary and other words.

5. *Dictation*: Children were read a sentence and asked to write the words. In scoring, children were given credit for every *sound* represented correctly, thus indicating the child's ability to analyze the word for sounds. Different versions of the test were used.

6. *Text Reading Level*. Individually, children were asked to read stories while the tester used a special technique to record reading behavior and also calculated an accuracy level. Children continued reading more difficult texts until they reached a level below 90% accuracy. The reading score was the highest level read with above 90% accuracy. Text reading level was based on the difficulty of certain tasks and basal reader texts.

The first five levels used easy books and listening tasks. For Level Two, for example, the teacher read *Where's Spot*? (1980) to the child and on one page asked the child to point to the pattern of words that had been read on several previous pages. A child unable to respond to print in this very simple way was designated as "Level One" and a child able to point to the words and read them was designated as having passed "Level Two." There were 26 levels in all, the highest level indicating approximately a sixth grade reading level.

7. *Writing Assessment*. At the end of the year, all groups of children were asked to write a story in response to a standardized prompt. No help was given on the assignment. Children were given 20 minutes to complete the task. Stories were collected and scored by "blind" scorers at the Ohio State University who had no knowledge of the children or the project. A holistic scoring procedure was used; writing samples were scored from one (low) to six (high).

8. Subtest 1, Reading Vocabulary, of the *California Test of Basic Skills* (1982), Forms U and V, a standardized test, was administered by the school district as part of their ongoing evaluation of compensatory programs.

9. Subtest 2, Reading Comprehension, of the CTBS, was also administered by the district evaluation department. Standardized tests were given only at the end of the school year.

**Procedures**. The first six measures were individually administered in the fall by Reading Recovery teachers in their own schools. For the spring testing, teachers went to schools other than their own, where they were given guidelines and a list of children to test on those measures and the writing assessment. The children on each tester's list were not identified by group, whether Reading Recovery, comparison, or random sampling of first graders. Testers were asked not to discuss the children's status with other teachers in the building. For the writing assignment, children were tested in groups of 10 to 15. On standardized measures, children were assessed along with their regular groups by representatives of the school district evaluation department.

The Reading Recovery teacher served children from all first grade classrooms in the school. Reading Recovery children in the two kinds of classrooms were considered separately because it was thought that having a classroom teacher who was knowledgeable about Reading Recovery created a situation which was different from the rest of the classrooms in the school. Of course, Reading Recovery teaching procedures were not used in the classroom setting.

**Results**. Teachers and researchers on the project evaluated the group of Reading Recovery children (96 children in Reading Recovery Program classrooms and 37 children in regular classrooms) who had received 60 daily lessons or who had been discontinued (successfully released from the program). Of that group, 104 (73%) were discontinued by the end of the school year having received an average of 67.5 lessons. The entire group of Reading Recovery children received an average of 76.3 lessons, the equivalent of 15.5 weeks of instruction.

When Reading Recovery teachers "discontinued" a child, they had assessed that child and predicted that he or she was achieving at an average level for the population and had the range of strategies essential for continuing to make progress without extra help. Decisions concerning whether or not children could be discontinued were made by examining a variety of data for each child: (a) level of text read at 90% accuracy or better; (b) scores on all assessments; (c) reading behavior and analysis as shown in the running record; (d) comments on teachers' lesson plans. There was no precise text level that a child had to read to be considered discontinued. Children who could read Primer and First Grade Book 1 levels and above were evaluated on the basis of the three factors listed. Comments from classroom teachers were also considered in the evaluation.

Descriptive data used for analysis in addressing research questions are presented in Table 1. Means and standard deviations are shown for three groups: (a) Reading Recovery Program Classroom children, (b) Reading Recovery Regular Classroom Children; and (c) Comparison Program Children from Regular Classrooms who were served by an alternative program. All three groups were in the lowest 20% achievement group of first graders in the 12 project schools.

**[Insert Table 1 about here.]**

For Research Question 2, the total population of comparison children was used. Means and standard deviations for the full population of comparison children are shown in Table 2.

**[Insert Table 2 about here.]**

Because subjects, dependent measures, design and analysis vary for research questions, those factors are described separately, along with results, for each question.

## Question 1: Do Reading Recovery Children from Program Classrooms Perform Differently from Reading Recovery Children from Regular Classsrooms?

To address Question 1, the overall performance of Reading Recovery children from program classrooms was compared with the overall performance of Reading Recovery children from regular classrooms. For the analysis a Hotelling's $T^2$ for a single sample was used. Reading Recovery children from program classrooms served as a population, and the performance of these children on the dependent variables were used as population parameters and compared with sample estimates of performance of Reading Recovery children in regular classrooms. Results from the analysis revealed that the performance was approximately the same for both Reading Recovery children in program classrooms and Reading Recovery children from regular classrooms (see Table 3).

**[Insert Table 3 about here.]**

This result indicates that the Reading Recovery program is not more effective for children in classrooms with a trained Reading Recovery teacher. These results suggest that the program is successful in helping children develop independent reading systems whether or not the classroom teacher has had special training.

## Question 2: Is the Performance of Reading Recovery Children in Regular Classrooms Superior to the Performance of Comparison Children?

Children in the academically lowest 20% of first grade students enrolled in each first grade classroom were assigned randomly either to the Reading Recovery program or to the alternative compensatory program. At the conclusion of the school year, both groups of students were assessed on the dependent measures. Responses to these measures were analyzed by a Hotelling T-square. Results of this analysis suggested that substantial differences did, in fact, exist between the two groups. Univariate t-tests to provide partial insight with respect to differences between the two groups on each dependent variable revealed that Reading Recovery children from regular classrooms performed better than the comparison children from regular classrooms on seven of the nine dependent measures (see Table 4). Reading Recovery children excelled on the basal Word Test, Concepts About Print, Writing Vocabulary, Dictation, Text Reading, Writing Sample and CTBS Reading Vocabulary. Both Reading Recovery children and comparison children exhibited similar performance on Letter Identification and CTBS Reading Comprehension scores.

**[Insert Table 4 about here.]**

### Question 3. Is the Performance of Reading Recovery Children in Program Classrooms Superior to the Performance of Comparison Children?

To address the above question, Hotelling's multivariate single sample test was employed. Sample values obtained for the comparison children on the performance measures listed above were compared to parameter values assessed for the population of Reading Recovery children attending program classrooms. Results from this analysis indicated that the performance of comparison children was less than the overall performance of the Reading Recovery children attending program classrooms. The single sample t-test revealed that comparison children performed at lower levels than Reading Recovery children on the Word Test, Concepts About Print, Writing Vocabulary, Dictation, Text Reading, Writing Sample, CTBS Reading Vocabulary and CTBS Reading Comprehension (see Table 5).

**[Insert Table 5 about here.]**

**Discussion.** Results of this research indicate that the Reading Recovery program had positive outcomes for children whose classroom teacher had received training in Reading Recovery and for children in regular classrooms. After an average of 67.5 lessons, over 70% of the children were released from the program and considered to no longer need remediation services. All Reading Recovery children made progress during the year, even those who remained in the program at the end of the year or who had moved before they could make enough progress to be discontinued. Reading Recovery children scored significantly higher than an equivalent group of alternate compensatory program children on Concepts About Print, Dictation Test, Word Test, Writing Vocabulary, and Text Reading. On one measure (Letter Identification) there was no significant difference; however, a ceiling effect was observed with all children scoring near perfect performance. Reading Recovery children achieved mean scores within an average band, defined as +.5 standard deviation of the mean of a random sample of first graders, on all measures. Discontinued Reading Recovery children scored average and above on all measures. Of the 136 children who had 60 lessons or were discontinued, 73% were successfully released from the program.

These results indicate that the Reading Recovery program, which focuses on helping children develop strategies through related reading and writing activities, is an effective program for children at risk of failure in first grade reading. The program, as implemented with a special teacher, can be used with success whether or not the classroom teacher has had special training in Reading Recovery. Whether teachers will continue to work with the same success after the training year has been completed is to be determined by data collection during Year II, and whether the program has lasting results for children will be determined by a follow-up study of the children.

## Summary and Conclusions

These investigations served to quantify results of a program which connects reading and writing and to uncover some basic processes which might be involved in the program. Children who were daily engaged in holistic lessons which included reading real stories and writing and then reading messages, achieved accelerated progress as measured by a variety of tests. While we cannot conclude from this research that making reading/writing connections were a necessary factor in that progress, our observations provided evidence that children who succeeded exhibited behaviors that indicated searching for those connections.

Reading Recovery children were deliberately engaged in activities which would lead to reading/writing connections. Sometimes teachers guided children to make links; often, children spontaneously made their own links and teachers actively supported them. Reading Recovery involves direct intervention to help children make connections and use information. Children are placed into situations where they are most likely to notice connections between reading and writing. Such intense intervention is unnecessary for most children because they create their own connections

by utilizing all literacy resources available at school and at home. It is possible, however, that all children might benefit from increased opportunities to participate in a fuller range of literacy activities in school settings.

The qualitative study serves as a beginning to unpack the complexities of the processes involved in children's learning to read. It appears that when given opportunity and encouragement, even very poor readers can make their own connections between reading and writing. This study confirms the belief that children use all literacy resources available to them as they attempt to construct meaning from and through written texts.

The study implies that teachers should consciously create settings which demand the use of both reading and writing and foster children's ability in making connections between the two processes; that may be of greatest importance for those children who have difficulty making connections between what they already know and the new material or processes to be learned. Helping children connect reading and writing is a promising area for research and for application. As in the Reading Recovery program, we recommend that teachers and researchers collaborate in creating settings for the collection of data and that such settings include the full range of complex social factors involved when children encounter text. In such settings, the goals of research and practice can jointly be served.

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## Footnote

[1]This research was undertaken as part of The Ohio Reading Recovery project and was collaboratively accomplished with colleagues from The Ohio State University: Diane E. DeFord, Carol A. Lyons, and Phillip Young.

**Table 1**

**Frequencies, Means, Standard Deviations for Spring Scores, Reading Recovery and Comparison Children**

| | Reading Recovery Program Classes[a] | | | Reading Recovery Regular Classes[b] | | | Comparison Program[b] | | |
|---|---|---|---|---|---|---|---|---|---|
| Measure | n | Mean | SD | n | Mean | SD | n | Mean | SD |
| Letter Ident. | 96 | 51.79 | 3.83 | 37 | 52.27 | 1.41 | 37 | 51.19 | 3.17 |
| Word Test | 96 | 13.59 | 1.85 | 37 | 13.68 | 1.63 | 37 | 12.51 | 2.87 |
| Concepts About Print | 96 | 16.62 | 2.77 | 37 | 15.81 | 2.91 | 37 | 14.30 | 3.08 |
| Writing Vocabulary | 96 | 35.38 | 12.56 | 37 | 32.86 | 13.49 | 37 | 26.05 | 14.32 |
| Dictation | 96 | 31.43 | 5.80 | 37 | 30.62 | 6.13 | 37 | 24.38 | 6.92 |
| Text Reading | 96 | 9.95 | 2.92 | 37 | 9.97 | 3.69 | 37 | 7.19 | 2.91 |
| Writing Sample | 94 | 2.96 | 1.25 | 37 | 2.89 | .94 | 37 | 2.39 | 1.12 |
| CTBS-NCE Reading Vocab. | 96 | 38.16 | 15.31 | 36 | 36.64 | 11.93 | 35 | 26.11 | 16.86 |
| CTBS-NCE Reading Comprehen. | 96 | 38.84 | 15.31 | 36 | 36.67 | 19.27 | 34 | 28.88 | 14.53 |

[a]Considered a population mean.
[b]Random sample of children

**Table 2**

**Means and Standard Deviations for Full Group of Comparison Children on Nine Measures[a]**

| Measure | N | Mean | SD |
|---|---|---|---|
| Letter Identification | 51 | 49.61 | 8.33 |
| Word Test | 51 | 11.98 | 3.92 |
| Concepts About Print | 51 | 13.98 | 3.31 |
| Writing Vocabulary | 51 | 25.37 | 14.33 |
| Dictation | 51 | 23.80 | 7.99 |
| Text Reading | 51 | 6.96 | 3.07 |
| Writing Sample | 46 | 2.33 | 1.10 |
| CTBS--NCE Score Reading Vocabulary | 45 | 28.07 | 17.00 |
| CTBS--NCE Score Reading Comprehension | 46 | 27.33 | 13.94 |

[a]Used in analysis for Research Question 2.

**Table 3**

**Analysis of Scores of Reading Recovery Children in Program Classrooms Compared with Reading Recovery Children in Regular Classrooms**

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Hotelling's $T^2$ = 19.55

$F_{9, 27} = 1.68, p = .142^*$

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*Not significant, differences on single variables not reported.

**Table 4**

**Analysis of Scores for Reading Recovery Children in Regular Classrooms and Comparison Children in Regular Classrooms**

Hotelling's $T^2 = 23.63$

$F_{9, 61} = 2.32, \ p = .025$

Differences in single variables:

| Measure | df | t[a] |
|---|---|---|
| Letter Identification | 72 | 1.90 |
| Word Test | 72 | 2.14* |
| Concepts About Print | 72 | 2.17* |
| Writing Vocabulary | 72 | 2.11* |
| Dictation | 72 | 4.11* |
| Text Reading | 72 | 3.60* |
| Writing Sample | 68 | 2.03* |
| CTBS--NCE Reading Vocabulary | 69 | 3.04* |
| CTBS--NCE Reading Comprehension | 68 | 1.90 |

[a]Positive value of t-statistic implies RR mean exceeds comparison mean

*$p \leq .05$

**Table 5**

**Analysis of Scores of Reading Recovery Children in Program Classrooms vs. Comparison Children in Regular Classrooms**

Hotelling's $T^2$ = 82.37

$F_{9, 38}$ = 7.58, p = .0000

Differences on single variables:

| | Population | | Sample | | | |
|---|---|---|---|---|---|---|
| Measure | Mean | N | Mean | SD | df | t[a] |
| Letter Identification | 51.79 | 51 | 49.61 | 8.33 | 50 | -1.87 |
| Word Test | 13.59 | 51 | 11.98 | 3.92 | 50 | -2.94* |
| Concepts about Print | 16.63 | 51 | 13.98 | 3.31 | 50 | -5.70* |
| Writing Vocabulary | 35.38 | 51 | 25.37 | 14.33 | 50 | -4.98* |
| Dictation | 31.43 | 51 | 23.80 | 7.99 | 50 | -6.81* |
| Text Reading | 9.95 | 51 | 6.96 | 3.07 | 50 | -6.96* |
| Writing Sample | 2.96 | 46 (b) | 2.33 | 1.10 | 45 | -3.90* |
| CTBS--NCE Reading Vocabulary | 38.16 | 45 (b) | 28.07 | 17.00 | 44 | -3.98* |
| CTBS--NCE Reading Comprehension | 38.84 | 46 (b) | 27.33 | 13.94 | 45 | -5.60* |

[a]Negative T value indicates that population mean (Reading Recovery Children in program classrooms) is greater than sample mean (Comparison children)

[b]Number changed because group measures were administered on a day when some children were absent.

*$p \leq .05$

## Figure Captions

**Figure 1.** Debbie: Boo-hoo

**Figure 2.** Kerry: Ann can get the cat

**Figure 3.** Kerry: Ann can go get the pumpkin

**Figure 4.** Kerry: Sara can go get the dragon

**Figure 5.** Kerry: Optimus Prime

**Figure 6.** Kerry: A little pig

**Figure 7.** Janelle: I am frightened

**Figure 8.** Henry: Beginning writing

**Figure 9.** Henry: Progression of writing

**Figure 1**

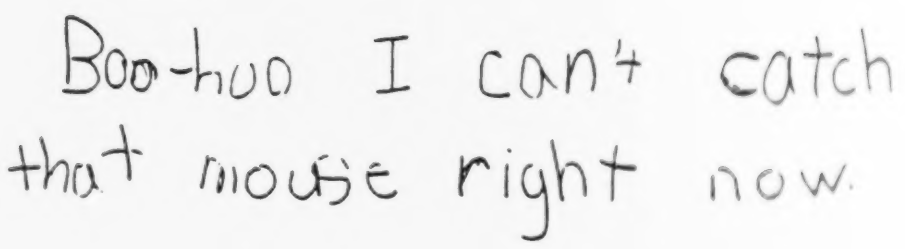


**Figure 2**

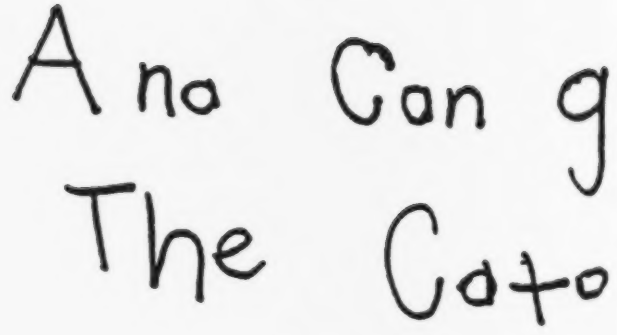

Figure 3

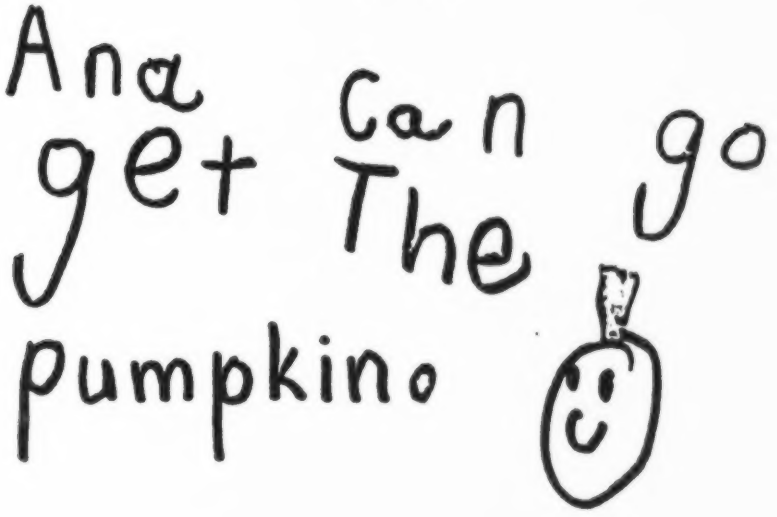


Figure 4

Figure 5

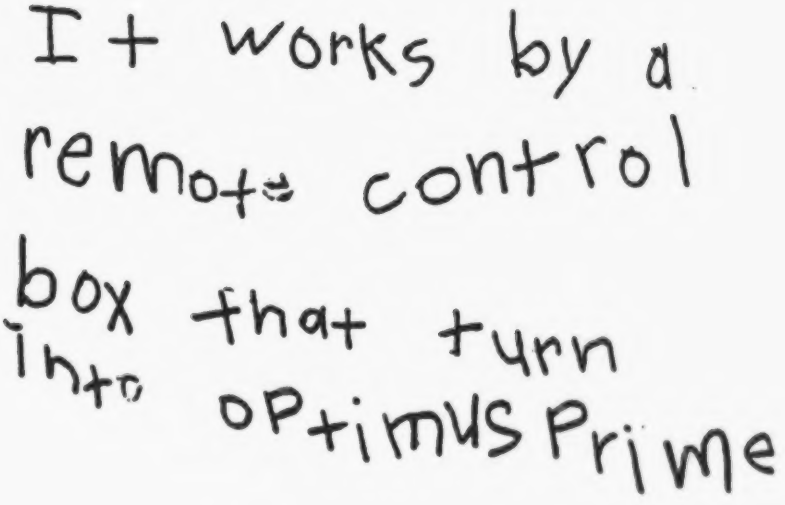


Figure 6

Figure 7

I am frightened
of the ghost.

Figure 8

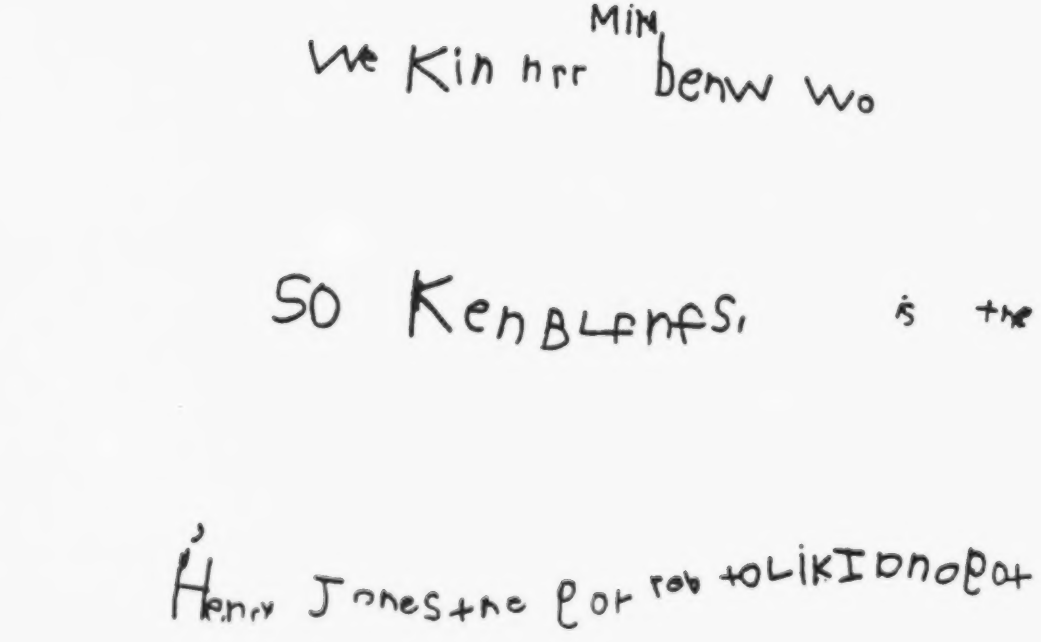

Figure 9

I Love to play in the
Snow everyday

I Love to jump in the
Snow every day.

I picked up a snowball and
I made a big one. It got
taller and taller
I Pushed it

The Snow is a lot and the Snow
is made of water.

The snow is a lot and the
snow always falls down
all the way to town.